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III. CLAIM AMENDMENTS

1. (Currently Amended) A polarization conversion unit ~~(17)~~ adapted for receiving from an optical circuit a first optical signal ~~(16)~~ with a first polarization state, and for generating, from said first optical signal, a set of n derived optical signals ~~(18)~~ with n different well-defined polarization states i, i = 1, ..., n, with n being a natural number greater than one, ~~whereby~~ wherein said n different well-defined polarization states are selected such ~~that polarization dependent measurement errors of the n derived optical signals substantially cancel irrespective of the first optical signal's polarization state.~~ that the sum of the cosines of δ_i over the n polarization states i, i = 1, ..., n, with δ_i denoting the angle between the respective polarization state i and the polarization state of maximum transmission of the optical circuit in a Poincaré sphere representation, is substantially equal to zero.

2.-4. (Cancelled)

5. (Currently Amended) The polarization conversion unit according to claim 1 ~~or any one of the above claims~~, wherein, from said first polarization state, two derived optical signals with two different polarization states ~~(S, S*)~~ are generated, whereby the second one ~~(S*)~~ of said two polarization states is the inverse of the first one ~~(S)~~ of said two polarization states.

6. (Currently Amended) The polarization conversion unit according to claim 1 ~~or any one of the above claims~~, wherein, from said first polarization state, which can be represented by a Stokes vector with the coordinates ~~(~~1, a, b, c~~)~~ in a Poincaré sphere representation, four derived optical signals with four different polarization states are generated, whereby said four polarization states can be represented by Stokes vectors with each the coordinates ~~(~~1, a, -c, b~~)~~; ~~,~~ ~~(~~1, -a, -c, -b; ~~),~~ ~~(~~1, -a, c, b; ~~),~~ and ~~(~~1, a, c, -b~~)~~ in a Poincaré sphere representation~~, with the first component of said Stokes vectors being normalized to one irrespective of the optical signal's power~~.

7. (Currently Amended) The polarization conversion unit according to claim 1 ~~or any one of the above claims~~, comprising a planar rotator ~~(25)~~, preferably a Faraday rotator,

preferably based on an optically active material, and a rotatable quarter wave plate~~(26)~~ for generating said n derived optical signals.

8. (Currently Amended) The polarization conversion unit according to claim 7, wherein

- said planar rotator is set to a rotation angle of 0° and said quarter wave plate is rotated by 0° in order to generate a first derived optical signal corresponding to a Stokes vector ~~{~~1, a, -c, b~~}~~;~~,~~

- said planar rotator is set to a rotation angle of 90° and said quarter wave plate is rotated by 0° in order to generate a second derived optical signal corresponding to a Stokes vector ~~{~~1, -a, -c, -b~~}~~;

- said planar rotator is set to a rotation angle of 90° and said quarter wave plate is rotated by 90° in order to generate a third derived optical signal corresponding to a Stokes vector ~~{~~1, -a, c, b~~}~~;~~,~~

- said planar rotator is set to a rotation angle of 0° and said quarter wave plate is rotated by 90° in order to generate a fourth derived optical signal corresponding to a Stokes vector ~~{~~1, a, c, -b~~}~~ in a Poincaré sphere representation,

- whereby said four derived optical signals are generated in arbitrary order.

9. (Currently Amended) The polarization conversion unit according to claim 1~~ or any one of the above claims~~, comprising a rotatable half wave plate~~ (31)~~ and a rotatable quarter wave plate~~ (32)~~ for generating said n derived optical signals.

10. (Currently Amended) The polarization conversion unit according to claim 9, wherein

- said half wave plate is rotated by 0° and said quarter wave plate is rotated by 0° in order to generate a first derived optical signal corresponding to a Stokes vector ~~{~~1, a, c, -b;~~}~~~~,~~

- said half wave plate is rotated by 45° and said quarter wave plate is rotated by 0° in order to generate a second derived optical signal corresponding to a Stokes vector ~~{~~1, -a, c, b~~}~~;

- said half wave plate is rotated by 45° and said quarter wave plate is rotated by 90° in order to generate a third derived optical signal corresponding to a Stokes vector ~~{~~1, -a, -c, -b;~~},~~

- said half wave plate is rotated by 0° and said quarter wave plate is rotated by 90° in order to generate a fourth derived optical signal corresponding to a Stokes vector ~~{~~1, a, -c, b~~}~~ in a Poincaré sphere representation,

- whereby said four derived optical signals are generated in arbitrary order.

11. (Currently Amended) An optical measurement system for determining a signal strength of a first optical signal ~~(16)~~ with a first polarization state, comprising

- a polarization conversion unit ~~(17)~~ according to ~~any of~~ claim~~s~~ 1 ~~to 10~~;

- a determination unit ~~(20)~~ adapted for measuring the signal strengths of the n derived optical signals ~~(18)~~ generated by said polarization conversion unit;

- an averaging unit ~~(21)~~ which determines an average value of the signal strengths for the n derived optical signals.

12. (Cancelled)

13. (Currently Amended) A measurement set-up for determining an insertion loss of a device under test – DUT – comprising:

-a light source, in particular a tunable light source, adapted for generating light that is incident on said DUT;

- said DUT which generates, in response to said incident light, a response signal; and

- a polarization conversion unit according to ~~any of~~ claim~~s~~ 1 ~~to 10~~, which derives, from at least one of: said incident light or said response signal, a set of n derived optical signals with n different well-defined polarization states,

- a determination unit adapted for measuring the signal strengths of the n derived optical signals generated by said polarization conversion unit;

-an averaging unit which averages the measurement results obtained for the n derived well-defined polarization states.

14. (Currently Amended) The measurement set-up according to claim 13, further comprising a polarization controller for converting the light of said light source to a number of polarization states at the input of the DUT.

15. (Currently Amended) A measurement set-up for determining a polarization dependent loss of a device under test – DUT – comprising:

- a light source ~~(11)~~, in particular a tunable light source;

- a polarization controller ~~(13)~~ adapted for varying the polarization state of the light ~~(12)~~ emitted by said light source, in order to generate polarized light ~~(14)~~ that is incident on said DUT ~~(15)~~;

- said DUT ~~(15)~~ which generates, in response to said polarized light ~~(14)~~, a response signal ~~(16)~~; and

- a polarization conversion unit ~~(17)~~ according to ~~any of~~ claims 1 ~~to 10~~, which derives, from at least one of: said incident light ~~(14)~~ or said response signal ~~(16)~~, a set of n derived optical signals ~~(18)~~ with n different well-defined polarization states,

- a determination unit ~~(20)~~ adapted for measuring the signal strengths of the n derived optical signals ~~(18)~~ generated by said polarization conversion unit ~~(17)~~;

- an averaging unit ~~(21)~~ which averages the measurement results obtained for the n derived well-defined polarization states.

16. (Currently Amended) A method for reducing or eliminating polarization dependent measurement errors, said method comprising ~~a~~ the steps of:

-receiving a first optical signal from an optical circuit,

generating from the first optical signal a set of n derived optical signals with n different well-defined polarization states, whereby said n different well-defined polarization states are selected such that the sum of the cosines of δ_i over the n polarization states i, i = 1, ..., n, with δ_i denoting the angle between the respective polarization state i and the

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polarization state of maximum transmission of the optical circuit in a Poincaré sphere representation, is substantially equal to zero.~~that polarization dependent measurement errors of the n derived optical signals cancel irrespective of the first optical signal's polarization state~~

17.-24. (Cancelled)

25. (Currently Amended) A software program or product, ~~preferably~~ stored on a data carrier, for ~~partly or completely executing the~~controlling the steps of ~~method of~~:

receiving a first optical signal from an optical circuit,

generating from the first optical signal a set of n derived optical signals with n different well-defined polarization states, whereby said n different well-defined polarization states are selected such that the sum of the cosines of δ_i over the n polarization states i, i = 1, ..., n, with δ_i denoting the angle between the respective polarization state i and the polarization state of maximum transmission of the optical circuit in a Poincaré sphere representation, is substantially equal to zero. ~~claim 16~~, ~~or any one of the above claims~~ when run on a data processing system such as a computer.

26. (Cancelled)